



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,248	02/17/2004	Michael Kozhevnikov	1-17-10	9662

7590 04/04/2006

Docket Administrator  
(Room 3J-219)  
Lucent Technologies Inc.  
101 Crawfords Corner Road  
Holmdel, NJ 07733-3030

EXAMINER

BLEVINS, JERRY M

ART UNIT

PAPER NUMBER

2883

DATE MAILED: 04/04/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/780,248	KOZHEVNIKOV ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jerry Martin Blevins	2883	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) ☒ Responsive to communication(s) filed on 18 January 2006.

2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) ☒ Claim(s) 1-31 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.

6) ☒ Claim(s) 1-31 is/are rejected.

7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.

8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) ☐ The specification is objected to by the Examiner.

10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All    b) ☐ Some \*    c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_

4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

Applicant's arguments, see pages 4-7, filed January 18, 2006, with respect to the rejection(s) of claim(s) 1-6, 17, 19, 27-29, and 31 under 35 USC 102(b) and with respect to claims 7-16, 18, 20-26, and 30 under 35 USC 103(a) have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of newly found prior art reference, US Patent to Graves et al., number 6,606,427. Since the new line of rejection is not necessitated by applicant's amendment, this rejection is non-final.

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-6, 14, 17, 27-29, and 31 are rejected under 35 U.S.C. 102(e) as being anticipated by Graves.

Regarding claim 1, Graves teaches an apparatus (Figure 7), comprising: an array of optical fibers (54,58); at least one wavelength sieve/combiner (19) that operates on

discrete wavelength units (column 5, line 63 – column 6, line 7); and a first array of micro mirrors (48,50); wherein the optical wavelength sieve/combiner is optically interposed between the array of optical fibers and the array of micro mirrors.

Regarding claim 2, Graves teaches the limitations of the base claim 1. Graves also teaches that any wavelength within one of the discrete wavelengths units is supplied to or received from the same beam position by the wavelength sieve/combiner (column 7, lines 21-46).

Regarding claim 3, Graves teaches the limitations of the base claim 1. Graves also teaches an array of micro lenses (52,56), one micro lens for each optical fiber in the array of optical fibers, the micro lenses being optically interposed between the array of optical fibers and the wavelength sieve/combiner.

Regarding claim 4, Graves teaches the limitations of the base claim 1. Graves also teaches an array of collimators (52,56), one collimator for each optical fiber, each of said collimators being attached to one of the optical fibers, the collimators being optically interposed between the optical fibers and the wavelength sieve/combiner.

Regarding claims 5 and 6, Graves teaches the limitations of the base claim 1. Graves also teaches a first focusing system (52,56) comprising a lens that focuses output beams from the wavelength sieve/combiner onto the first array of micro mirrors.

Regarding claim 14, Graves teaches the limitations of the base claim 1. Graves also teaches a plurality of the wavelength sieve/combiners (Figures 9).

Regarding claim 17, Graves teaches the limitations of the base claim 1. Graves also teaches at least one sensor (column 20, lines 25-56) for detecting light at at least a prescribed one of the discrete wavelength units.

Regarding claims 27 and 28, Graves teaches the limitations of the base claim 1. Graves also teaches that the apparatus is adapted to operate at least in part as a multiplexer and at least in part as a demultiplexer (column 5, lines 24-38)

Regarding claim 29, Graves teaches the limitations of the base claim 1. Graves also teaches that the apparatus is adapted so that beams from the optical fibers are converging prior to encountering the at least one wavelength sieve/combiner (column 21, lines 9-50).

Regarding claim 31, Graves teaches an apparatus (Figure 7), comprising: a sieve/combiner (19); and an array of micro mirrors (48,50); wherein the sieve/combiner is optically interposed between the array of micro mirrors and an array of optical elements (fibers 54,58) at least one of which is adapted to supply an optical beam to the apparatus (54) and at least one is adapted to receive an optical beam from the apparatus (58).

***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 7 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graves in view of US Patent to Hatano et al., number 6,721,099.

Regarding claim 7, Graves teaches the limitations of the base claim 5. Graves does not teach that the first focusing system comprises a prism, but rather teaches a lens (Figure 1A, element 102). Hatano teaches that prisms can be chosen instead of lenses in order to obtain the same focusing effects (column 3, lines 11-16). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Graves by choosing a prism as the focusing system, as taught by Hatano. The motivation would have been to individually focus the discrete wavelength units.

Regarding claim 30, Graves teaches the limitations of the base claim 29. Graves does not teach that a prism optically interposed between the wavelength sieve/combiner and the array of micro mirrors, but rather teaches a lens (Figure 1A, element 102). Hatano teaches that prisms can be chosen instead of lenses in order to obtain the same focusing effects (column 3, lines 11-16). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Graves by choosing a prism as the focusing system, as taught by Hatano. The motivation would have been to individually focus the discrete wavelength units.

Claims 8-13, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graves in view of US Patent to Lee et al., number 6,269,202.

Regarding claim 8, Graves teaches the limitations of the base claim 1. Graves does not teach that the wavelength sieve/combiner comprises at least one thin film optical filter. Lee teaches that thin film optical filters can be chosen to serve as wavelength sieve/combiners (column 1, lines 48-50). It would have been obvious to

one of ordinary skill in the art at the time of the invention to modify Graves by choosing a thin film optical filter as the wavelength sieve/combiner, as taught by Lee. The motivation would have been to reduce loss and increase channel isolation (Lee, column 1, lines 50-53).

Regarding claims 9 and 10, Graves in view of Lee teaches the limitations of the base claim 8. Lee also teaches that the thin film optical filter is mounted on a glass substrate (Figure 1A and column 3, line 66 – column 4, line 6). It would have been obvious to one of ordinary skill in the art to modify Graves with the thin film filter mounted on a glass substrate taught by Lee. The motivation would have been to improve stability of the filter.

Regarding claim 11, Graves in view of Lee teaches the limitations of the base claim 8. Graves also teaches that the wavelength sieve/combiner (replaced by a thin film filter as taught by Lee) is freespace suspended (column 21, lines 9-50).

Regarding claims 12 and 13, Graves in view of Lee teaches the limitations of the base claim 8. Graves also teaches that the wavelength sieve/combiner (replaced by a thin film filter as taught by Lee) passes a portion of all (which includes the subset of some) of the wavelengths incident upon it and reflects a portion of all (which includes the subset of some) of the wavelengths incident upon it, whereby a copy of the incident wavelengths (that a portion is passed for) is created (column 21, line 51 – column 22, line 10).

Regarding claim 15, Graves teaches the limitations of the base claim 1. Graves does not teach that there is a plurality of the wavelength sieve/combiners and each of

the wavelength sieve/combiners is formed from respective portions of a plurality of strips of thin film optical filters. Lee teaches that thin film optical filters can be chosen to serve as wavelength sieve/combiners (column 1, lines 48-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Graves by choosing a thin film optical filter as the wavelength sieve/combiner, as taught by Lee. The motivation would have been to reduce loss and increase channel isolation (Lee, column 1, lines 50-53). Graves in view of Lee does not teach a plurality of wavelength sieve/combiners. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a plurality of the wavelength sieve/combiners since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. The motivation would have been to improve coupling between the plurality of fibers and the plurality of micro mirrors.

Regarding claim 16, Graves teaches the limitations of the base claim 1. Graves also teaches that the at least one wavelength sieve/combiners is adapted to supply as output one beam for a discrete wavelength unit (column 4, lines 13-20). Graves does not teach a plurality of strips of thin film optical filter incorporated in the wavelength sieve/combiner. Lee teaches that thin film optical filters can be chosen to serve as wavelength sieve/combiners (column 1, lines 48-50). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Graves by choosing a thin film optical filter as the wavelength sieve/combiner, as taught by Lee. The motivation would have been to reduce loss and increase channel isolation (Lee, column



1, lines 50-53). Graves in view of Lee does not teach a plurality of strips of thin film optical filters. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to provide a plurality of strips of thin film optical filters since it has been held that mere duplication of the essential working parts of a device involves only routine skill in the art. *St Regis Paper Co. v. Bemis Co.*, 193 USPQ 8. The motivation would have been to improve coupling between the plurality of fibers and the plurality of micro mirrors.

Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Graves in view of US Pre Grant Publication to Brennan, III et al., number 2003/0059195.

Regarding claim 18, Graves teaches the limitations of the base claim 17. Graves does not teach that the at least one sensor is mounted on the at least one wavelength sieve/combiner. Brennan teaches mounting a sensor on a wavelength sieve/combiner (pages 5 and 6, paragraphs 65 and 66). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Graves with a sensor mounted on a wavelength sieve/combiner as taught by Brennan. The motivation would have been to simplify manufacturing and reduce costs (Brennan, pages 5 and 6, paragraphs 65 and 66).

Claims 19 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graves in view of US Pre Grant Publication to Mala et al., number 2003/0223679.

Regarding claims 19 and 20, Graves teaches the limitations of the base claim 1. Graves does not teach that at least one micro mirror of the array of micro mirrors can tilt around two axes, wherein each of the two axes are substantially orthogonal to the other. Mala teaches micro mirrors which can tilt around two orthogonal axes (abstract). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Graves with the micro mirrors which can tilt around two orthogonal axes as taught by Mala. The motivation would have been to increase the degrees of freedom of the micro mirrors.

Claims 21-23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Graves in view of US Pre Grant Publication to Wu et al., number 2005/0213877.

Regarding claims 21-23, Graves teaches the limitations of the base claims 1 and 5. Graves does not teach a second array of micro mirrors; wherein the optical wavelength sieve/combiner is also optically interposed between the array of optical fibers and the second array of micro mirrors; and a second focusing system that focuses output beams from the wavelength sieve/combiner onto the second array of micro mirrors. Wu teaches a second array of micro mirrors (Figure 3, element 108, as compared to first array of micro mirrors, element 104); wherein a wavelength sieve/combiner (grating 16) is optically interposed between an array of fibers (56) and both the first and second arrays of micro mirrors and a second focusing system (Figure 3, element 20b as compared to first focusing system 20a) that focuses output beams from the wavelength sieve/combiner onto the second array of micro mirrors. It would

have been obvious to one of ordinary skill in the art at the time of the invention to modify Graves with the second array of micro mirrors and second focusing system of Wu. The motivation would have been to increase the number of input/output fibers (Wu, page 1, paragraphs 10 and 11).

Regarding claim 25, Graves in view of Wu teaches the limitations of the base claim 23. Wu also teaches that the first and the second focusing system are the same (they are both a lens). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Graves with the two same focusing systems taught by Wu. The motivation would have been to ease alignment of the focusing systems.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Graves in view of Wu as applied to claim 23 above, and further in view of Hatano.

Regarding claim 24, Graves in view of Wu teaches the limitations of the base claim 23. Graves does not teach that the first and the second focusing system are different. Hatano teaches that prisms can be chosen instead of lenses in order to obtain the same focusing effects (column 3, lines 11-16), implicitly teaching that one focusing system can be chosen to be a lens (as taught by Graves) while the other can be chosen to be a prism. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Graves with the different focusing systems as implicitly taught by Hatano. The motivation would have been to improve distinction between output and input wavelengths.

Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Graves in view of US Pre Grant Publication to Turpin et al., number 2003/0021525.

Regarding claim 26, Graves teaches the limitations of the base claim 1. Graves does not teach that the apparatus is adapted to operate in broadcast mode. Turpin teaches an apparatus utilizing a wavelength sieve/combiner which can be adapted to operate in broadcast mode (Figures 5 and 6 and page 4, paragraph 50). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Graves so as to be adapted for broadcast mode, as taught by Turpin. The motivation would have been to increase the amount of information transferred by the apparatus.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jerry Martin Blevins whose telephone number is 571-272-8581. The examiner can normally be reached on Monday through Friday.

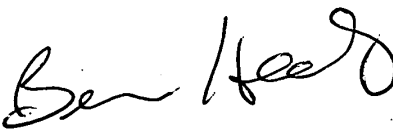
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number: 10/780,248  
Art Unit: 2883

Page 12

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JMB

  
BRIAN HEALY  
PRIMARY EXAMINER  
ART UNIT 2883